
Weather.Lawyer

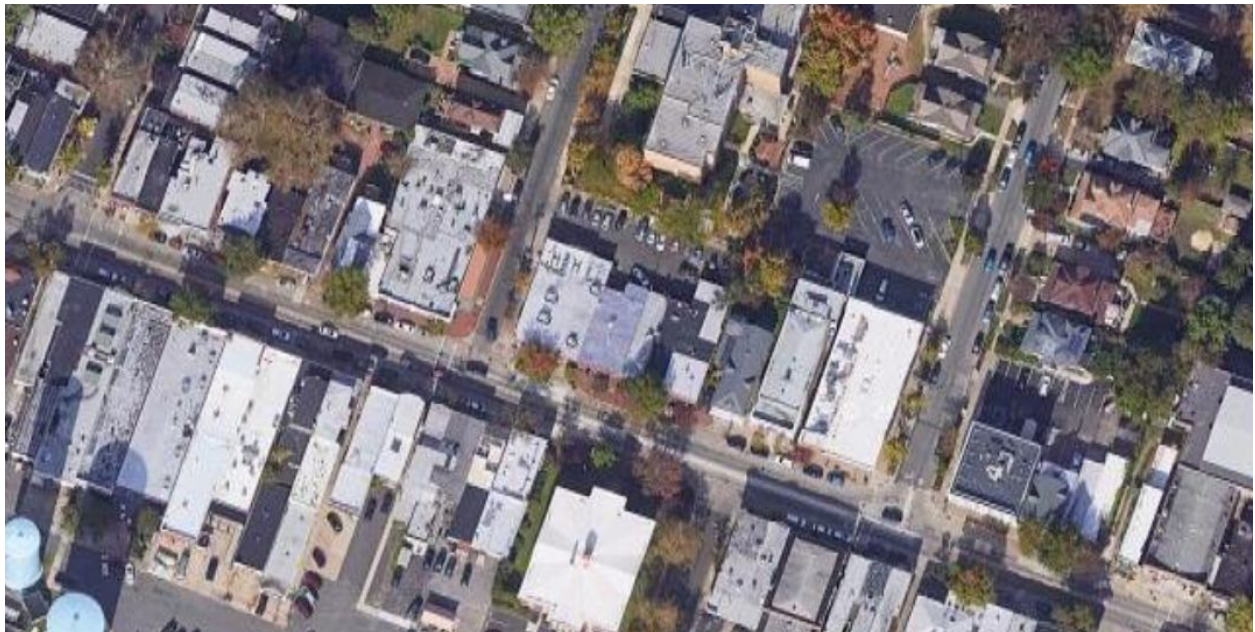
(732) 673-2074

Slip and Fall Investigation

10 June 2020

OVERVIEW

This investigation was assigned to Weather.Lawyer by the XYZ Law Firm. On 13 April 2020, their client slipped and fell while entering a storefront at approximately 7 am.



The following data collection, analysis, and conclusions are in regards to this specific investigation only. Data consists of National Weather Service (NWS) Meteorological Terminal Air Reports (METARs), NWS Five-Minute Observations (FMOs), NWS NEXRAD images, National Ocean and Atmospheric Administration (NOAA) satellite images, and various surface analyses. Special algorithms were applied to METARs and FMOs to estimate atmospheric conditions for the given address at the geographical point of 39.9158188, -75.0681296.

Weather Synopsis

Radar shows widespread precipitation at the time of the incident (Image A). Over an inch of rain had fallen the day of the incident (Image B). The skies appeared to be covered by deep overcast clouds (Image C). The surface analysis indicates (Image D) a low pressure system was located over the Great Lakes, with a warm front moving toward New Jersey. These features are also indicated on the radar and satellite images. Light, moderate, and heavy rainfall associated with the warm front was found throughout southern New Jersey (Image E). These background images were used for this weather synopsis and as guidance for the remainder of the investigation.

DATA COLLECTION

The following data artifacts were collected to perform the Meteorological Analysis. The collected data are official government records known to exist that the time of analysis. Any additional weather information that becomes available may be included into this report at a later time. Data was collected from the National Center for Environmental Information (NCEI). NCEI is responsible for hosting and providing access to world weather archives, with comprehensive oceanic, atmospheric, and geophysical data. NCEI is the leading government authority for environmental information.

Daily Weather Summaries

Daily weather summaries are archived data for hundreds of stations throughout the United States. High and low temperatures, significant weather conditions, and precipitation are typical measurements recorded in daily summaries. Daily weather summaries for April 12-14 are included in this report.

METARs/FMOs

METARs typically come from airports or permanent weather observation stations. Reports are generated once an hour or half-hour, but if conditions change significantly, a report known as a special (SPECI) may be issued. Some METARs are encoded by automated airport weather stations located at airports, military bases, and other sites. Some locations use augmented observations, which are recorded by digital sensors, encoded via software, and then reviewed by certified weather observers or forecasters prior to being transmitted. Observations may also be taken by trained observers or forecasters who manually observe and encode their observations prior to transmission. FMOs are the five-minute observation component to METARs, and are recorded separately. METARs and FMOs for the following locations were used in this analysis: Philadelphia, PA (KPHL), Mt. Holly, NJ (KVAY), Wilmington, DE (KILG), and Millville, NJ (KMIV).

NEXRAD

NEXRAD is a network of 159 high-resolution S-band Doppler weather radars operated by the NWS. NEXRAD detects precipitation and atmospheric movement. Electro-magnetic beams return data which when processed can be displayed in a mosaic map, and show patterns of precipitation and its corresponding movement. The radar system operates in two basic modes, selectable by the operator: a slow-scanning *clear-air mode* for analyzing air movements when there is little or no activity in the area, and a *precipitation mode*, with a faster scan for tracking active weather. NEXRAD has an increased emphasis on automation, including the use of algorithms and automated volume scans. For this analysis the Mt. Holly, NJ (DIX) radar was used. DIX was in precipitation mode at the time of the incident.

NOAA Satellite

The Geostationary Operational Environmental Satellite system (GOES), operated by the United States' National Oceanic and Atmospheric Administration (NOAA)'s National Environmental Satellite, Data, and Information Service division, supports weather forecasting, severe storm tracking, and meteorology research. Spacecraft and ground-based elements of the system work together to provide a continuous stream of environmental data. The NWS uses the GOES system for North American weather monitoring and forecasting operations, and scientific researchers use the data to better understand land, atmosphere, ocean, and climate interactions. For this analysis, GOES-E (the satellite covering the eastern portion of the United States), was used.

METEOROLOGICAL ANALYSIS

Overview

Daily, hourly, and 5 minute data show stable meteorological conditions. All observed weather parameters were homogeneous throughout the area near Collingswood, NJ. Our algorithms were applied to determine the estimated conditions for Collingswood, NJ using data from the surrounding area. The distance to Collingswood and elevation differences are taken into consideration by the algorithms.

Table 1 - Site Comparisons

Site	Distance to location	Elevation	Elevation Difference
KPHL	13.6 miles	541 feet	+16 feet
KVAY	18.6 miles	427 feet	+16 feet
KILG	44.9 miles	525 feet	+72 feet

KMIV	28.7 miles	581 feet	+23 feet
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Table 1a - Daily Weather Summaries (April 12)

Site	Significant Wx	High	Low	Precipitation
KPHL	Light rain	69	39	0.07
KVAY	Light rain	69	32	0.05
KILG	Light rain	69	36	0.16
KMIV	Light rain	67	34	0.08
Collingswood	Light rain	68	33	0.06

Table 1b - Daily Weather Summaries (April 13)

Site	Significant Wx	High	Low	Precipitation
KPHL	Heavy rain	72	53	1.62
KVAY	Heavy rain	70	52	1.58
KILG	Heavy rain	72	52	1.88
KMIV	Moderate Rain	66	56	1.27
Collingswood	Heavy Rain	71	52	1.60

Table 1c - Daily Weather Summaries (April 14)

Site	Significant Wx	High	Low	Precipitation
KPHL	None	58	45	Trace
KVAY	None	56	43	Trace
KILG	None	59	43	0.01
KMIV	None	59	44	Trace
Collingswood	None	57	44	Trace

Table 2 - METARS (7-8 am)

Site	Conditions	Temp	Visibility	Wind Speed	Wind Direction	Accumulated Precipitation
KPHL	Light Rain	65	7 miles	20 mph	WSW	0.55 inches
KVAY	Light Rain	66	2 miles	22 mph	WSW	0.52 inches
KILG	Light Rain	64	8 miles	24 mph	WSW	0.57 inches
KMIV	Light Rain	64	8 miles	23 mph	SSW	0.59 inches
Collingswood	Light Rain	65	4 miles	22 mph	WSW	0.53 inches

Table 3 - FMOs (7-7:05 am)

Site	Conditions	Temp	Visibility	Wind Speed	Wind Direction	Evaporation Rate
KPHL	Light rain	64	7 miles	19 mph	WSW	0
KVAY	Light rain	66	2 miles	24 mph	WSW	0
KILG	Light rain	63	9 miles	22 mph	W	0
KMIV	Light rain	64	10 miles	20 mph	SSW	0
Collingswood	Light rain	65	4 miles	22 mph	WSW	0

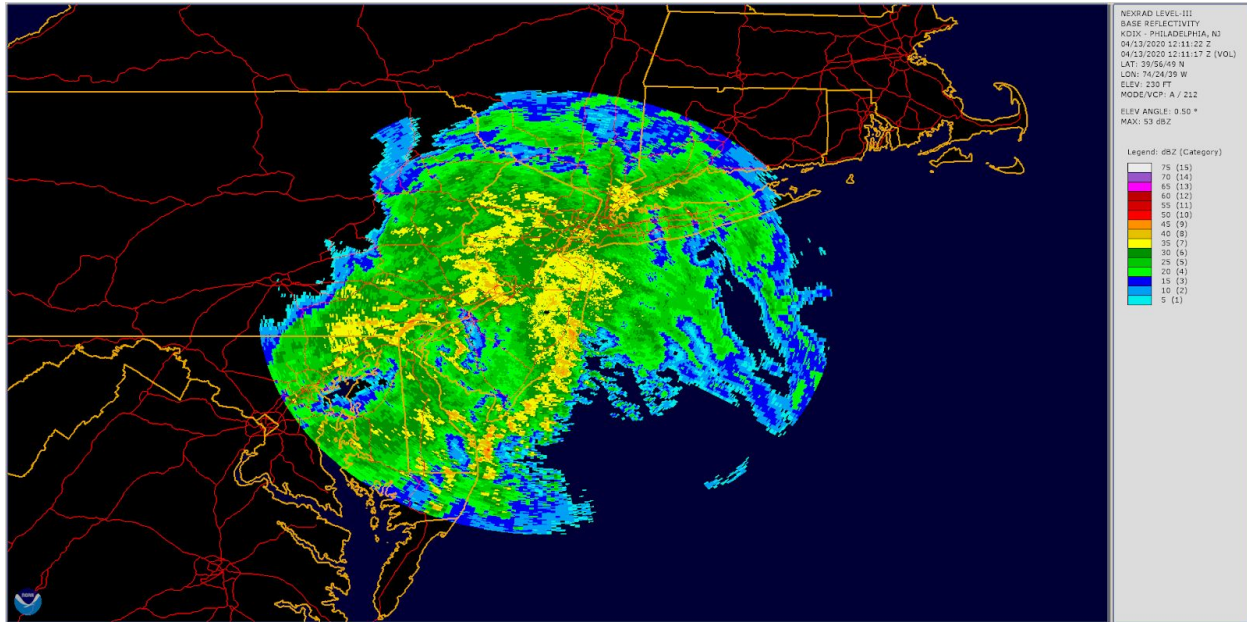
Temperatures

The high temperature was estimated to be 68 F. At the time of the incident, the temperature was estimated to be 65 F. Temperature was not a significant factor for this incident.

Precipitation

The radar covering Collingswood was in precipitation mode at the time of the incident. Based on the echos on the radar image below, it was determined that light precipitation was falling at the time. There was some moderate to heavy precipitation north and west of the area. Due to light rain falling at the time of the incident, the evaporation rate was determined to be 0. Any falling rain not absorbed by the surface would be considered standing water.

NEXRAD - Mt. Holly, NJ (DIX)



CONCLUSION

A low pressure system was located over the Great Lakes, with a warm front moving toward New Jersey. Widespread light rain was located in the area at time of the incident. Based on data from nearby stations, our algorithms determined that 0.53 inches of rain had fallen prior to the time of the incident, indicating that moderate to heavy rainfall occurred prior to the incident. Evaporation rates were likely near zero based on the weather conditions. On non-porous or poor draining surfaces, standing water likely would have been present at the time of the incident, with wet conditions a near certainty.

CERTIFICATION

I certify the information contained in this report is accurate to the best of my professional ability and that all expressed opinions, findings, estimations, and interpolations were made within a reasonable degree of meteorological certainty.

BACKGROUND MAPS

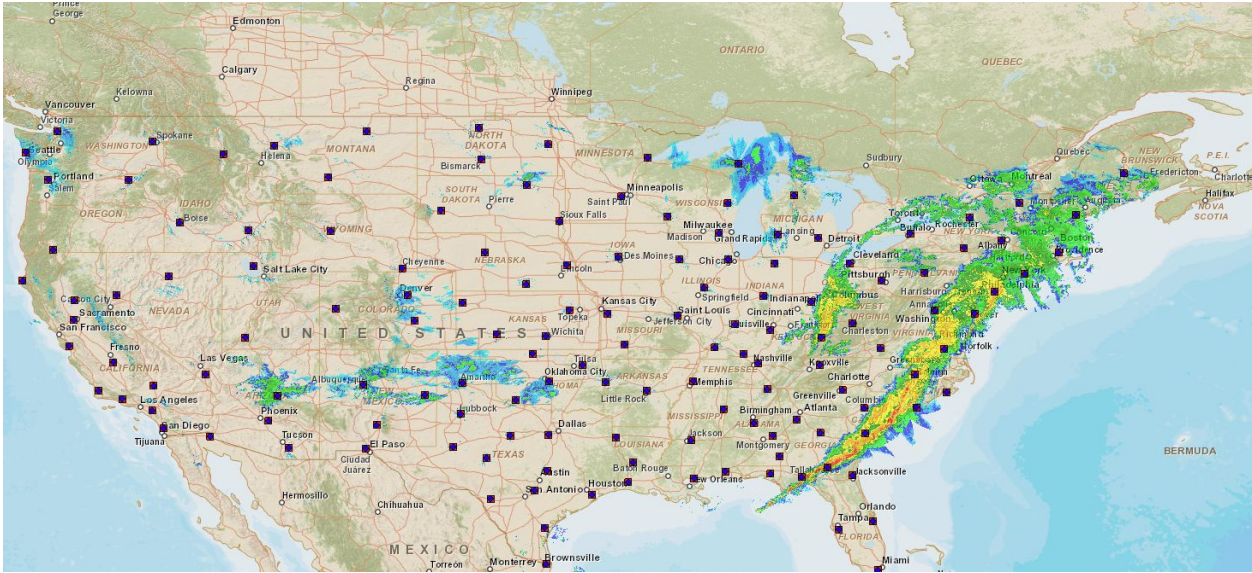


Image A - Radar Summary

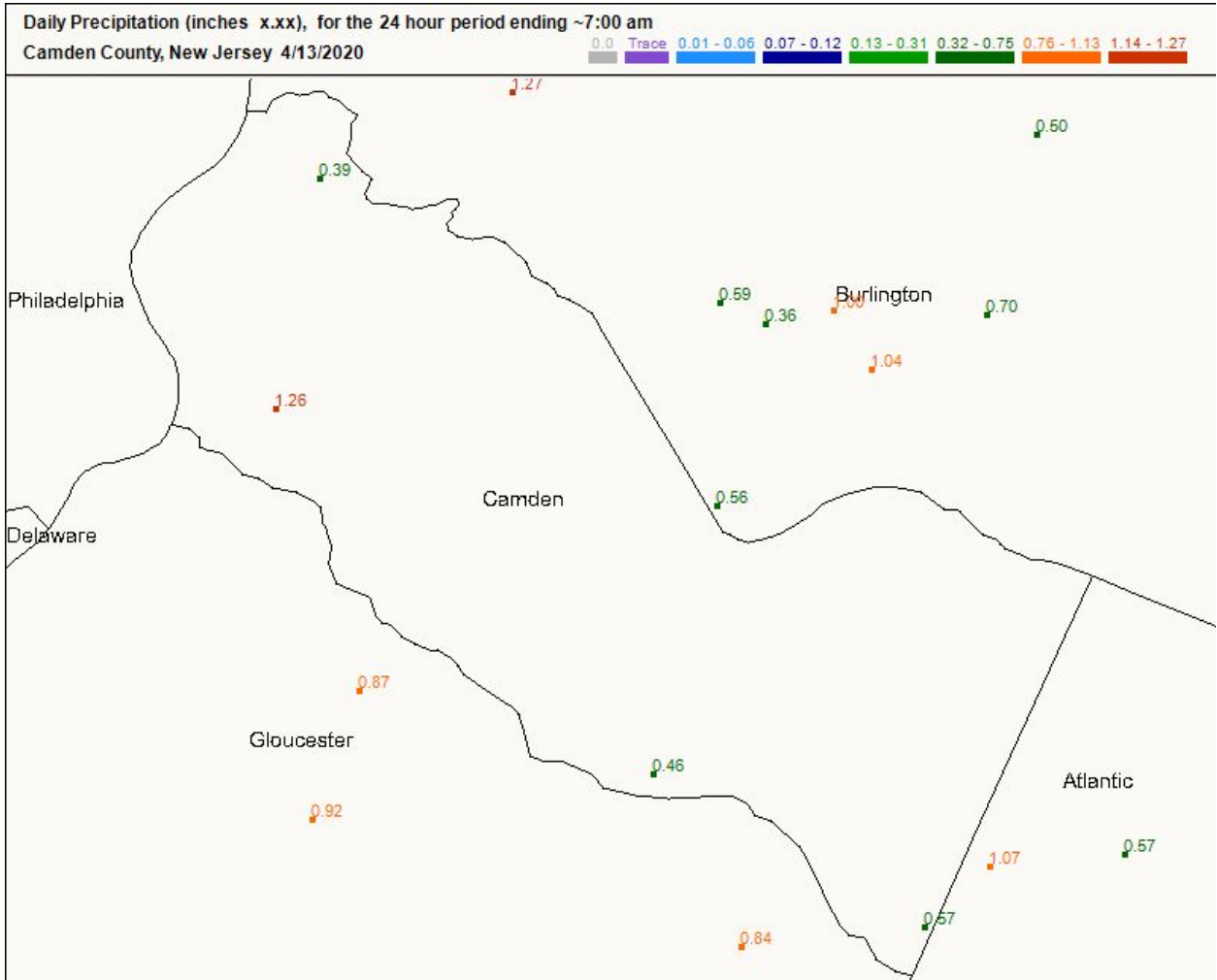


Image B - Observed Total Rainfall

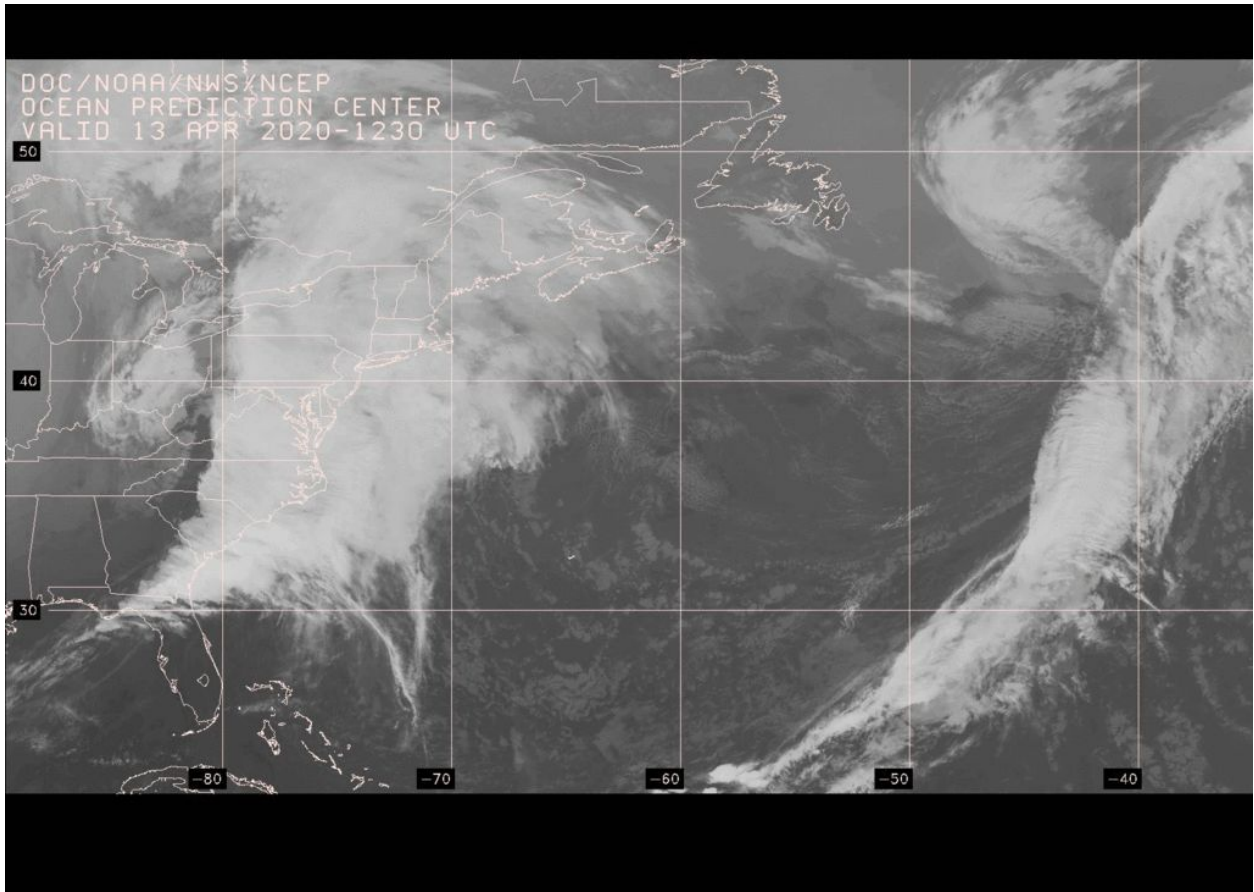


Image C - US Satellite

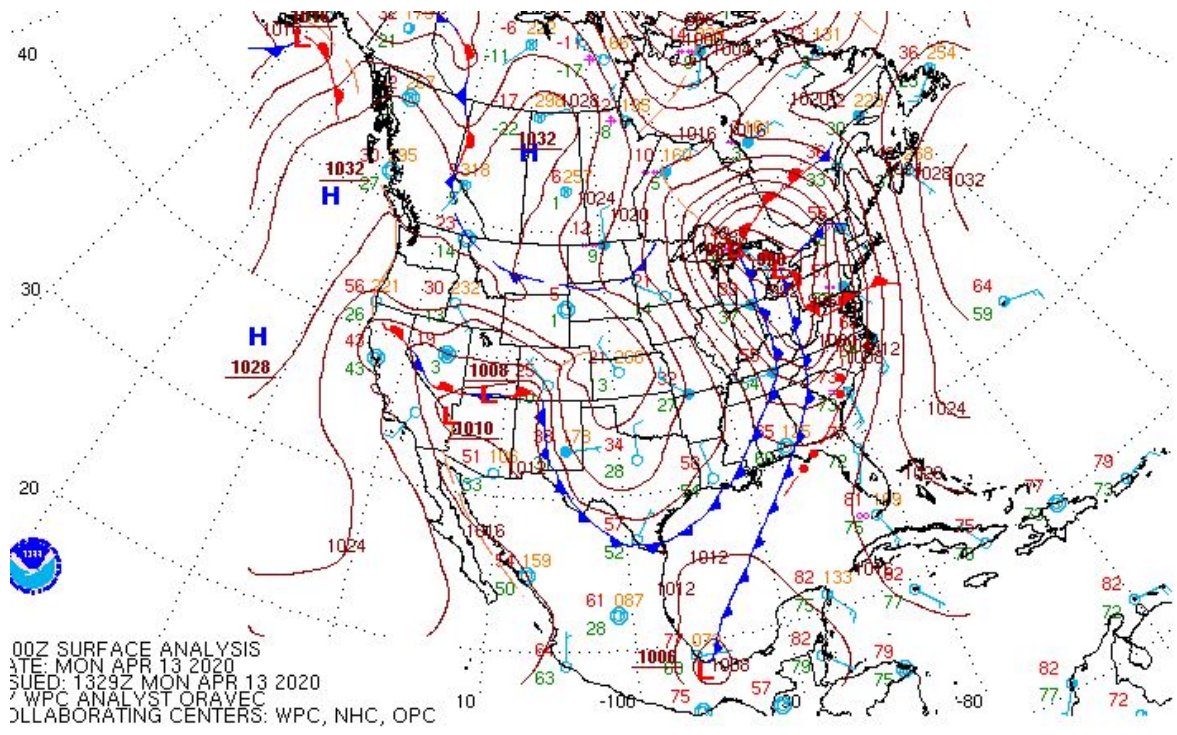


Image D - US Surface Analysis

1200Z SURFACE ANALYSIS
DATE: MON APR 13 2020
BY: WPC ANALYST DRAVEC
COLLABORATING CENTERS: WPC, NHC, OPC

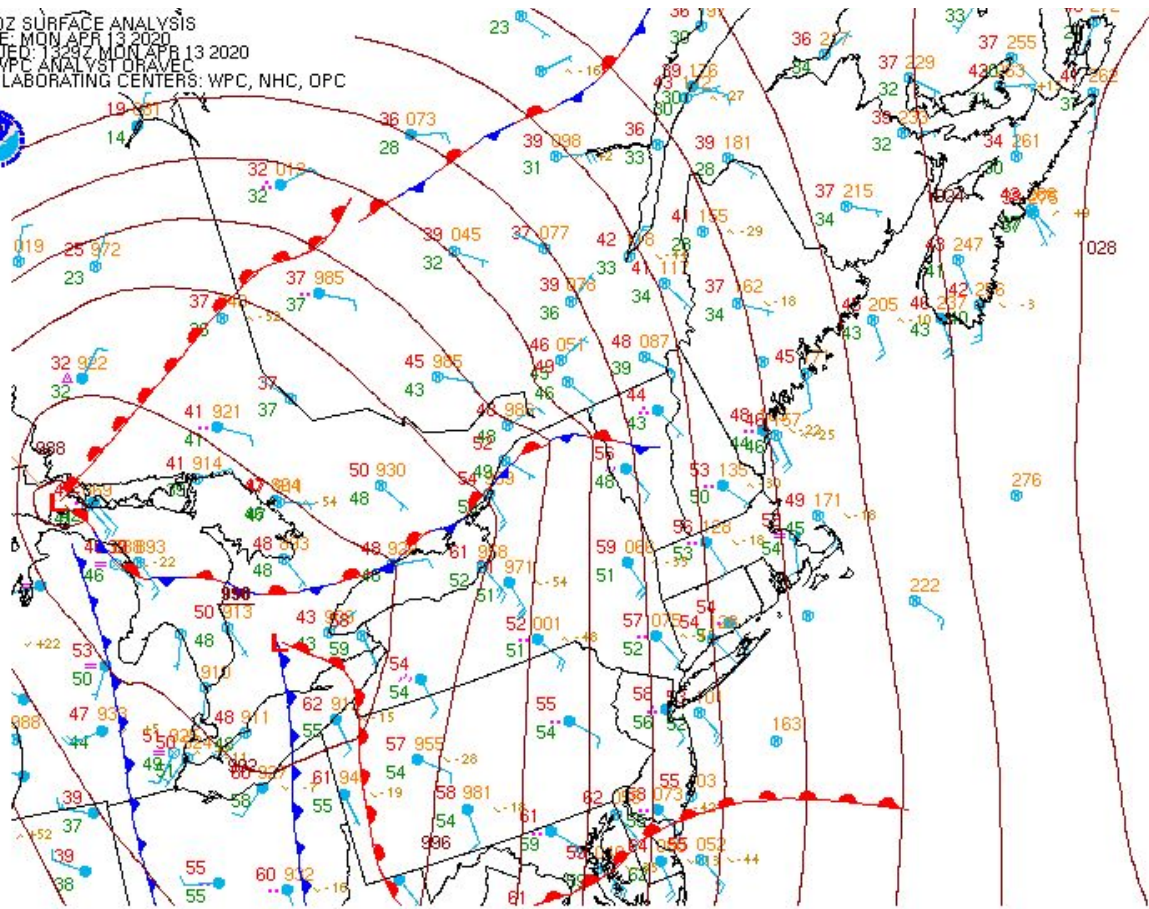


Image E - Northeast Surface Analysis